

## PATENT SPECIFICATION



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**186,940**

Application Date (in United Kingdom): Oct. 9, 1922. No. 27,331 / 22.

Complete Accepted: Aug. 13, 1925.

### COMPLETE SPECIFICATION.

#### Process for Treating Meal, Milling- and Meal-products.

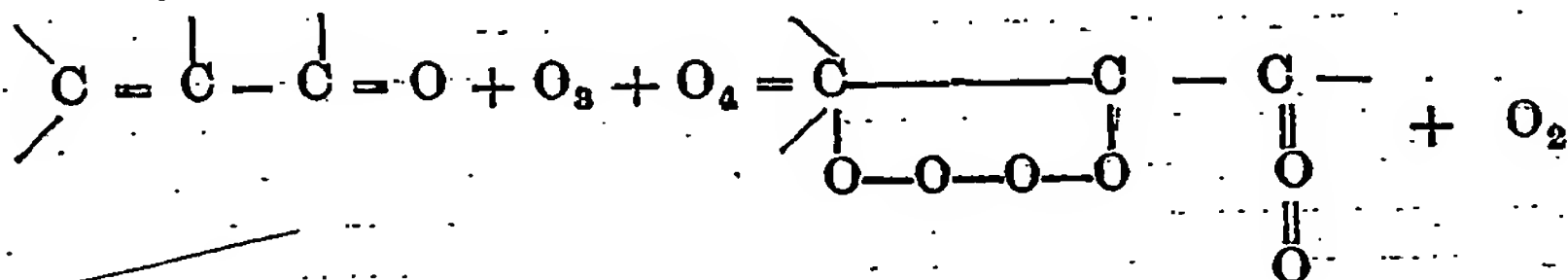
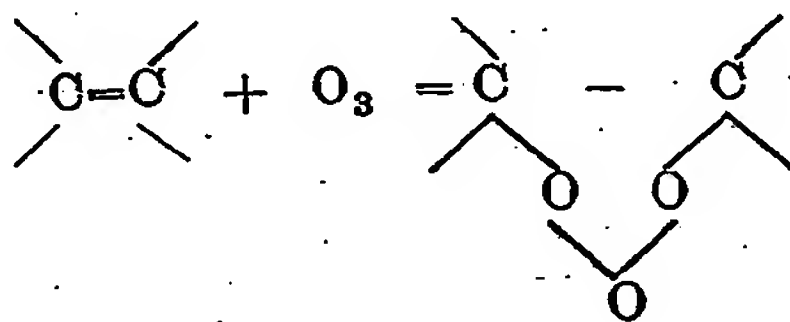
We, NAAMLooZE VENNOOTSCHAP INDUSTRIELE MAATSCHAPPIJ VOORHEEN NOURY AND VAN DER LANDE, of Deventer, Holland, a company registered under the laws of Holland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 The invention relates to the treatment of meal, milling and meal products and shows the surprising features that in a very economical and simple way a bleaching, an increase in the bread yield, an improvement in the baking quality and in the colour, as well as an increase in the durability, are obtained.

According to the invention these results are attained by treating the products with one or more peraldehydes, ozonides, perozonides or peroxy bodies of like character.

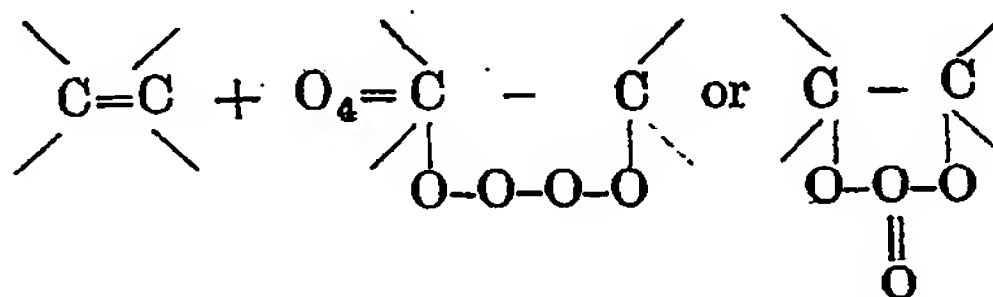
The class of bodies, the use of which is included in the scope of the invention, comprises the following sub-classes:—

30 Ozonides, that is to say ozone addition products of unsaturated organic compounds, the formation of which may be represented by the following equation:—



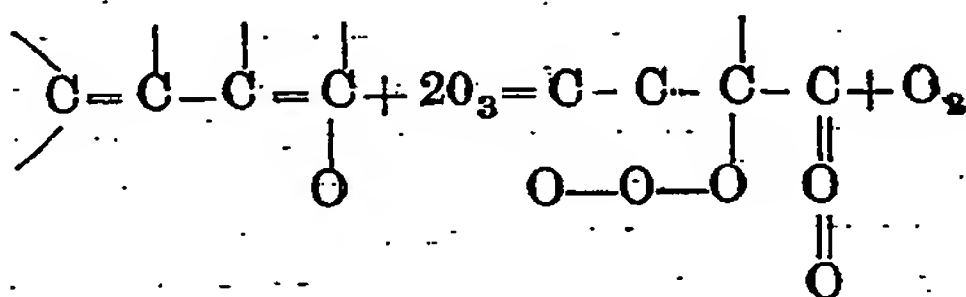
Oxozonides or perozonides, that is to say oxozone (O<sub>4</sub>) addition products of unsaturated organic compounds, according to the equation:—

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Ozonide peroxides formed when organic compounds comprising a double bond and a carbonyl group are treated with ozone when the reaction represented by the following equation apparently takes place:—

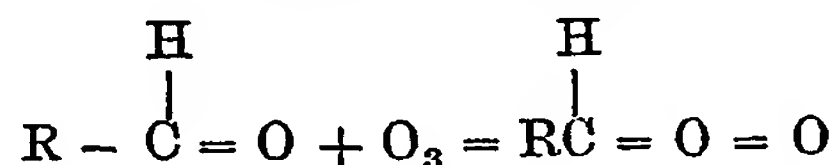
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Oxozonide peroxides formed when oxozone (O<sub>4</sub>) and ozone (O<sub>3</sub>) act upon organic compounds comprising a double bond and a carbonyl group as indicated by the equation:—

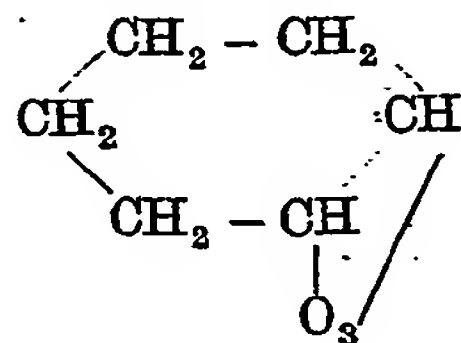
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Peraldehydes such as are formed by the interaction of ozone on aldehydes:—

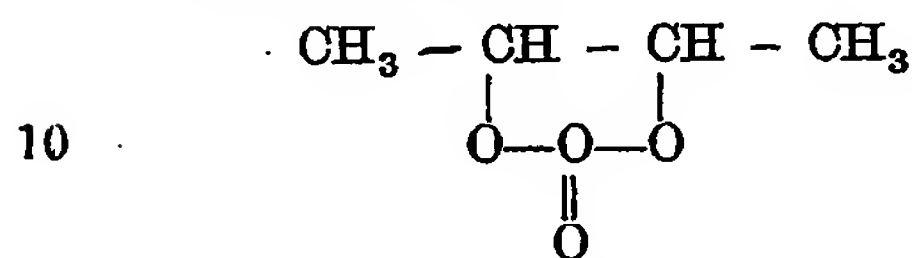


As concrete examples of bodies falling within these several sub-classes, the following are given:—

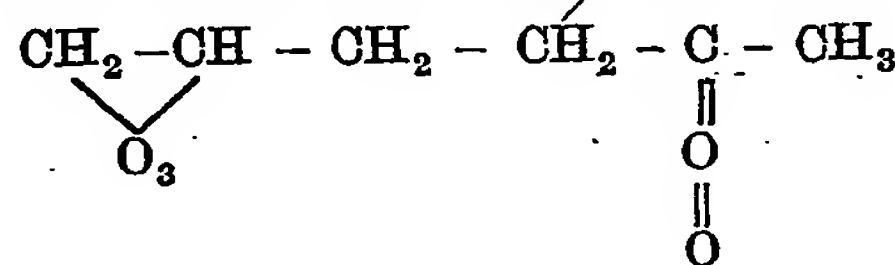
Cyclohexane ozonide M.P. 75° C.



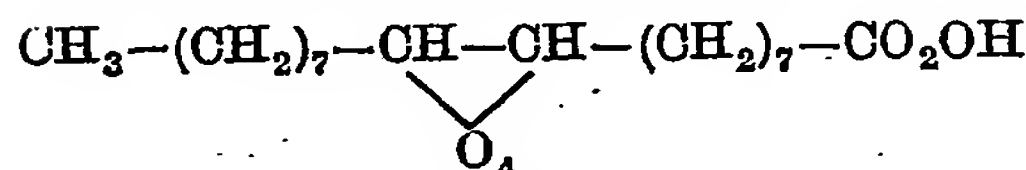
Butyl oxozonide



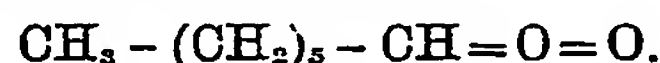
Allyl-acetone ozonide peroxide



Oleic acid oxozonide peroxide



Oenanthyl aldehyde peroxide or oenanthyl peraldehyde



The treatment of the products may be affected by the addition of the bodies in question to the grain before milling or to the final or intermediate products of the milling process, while optionally treatment of the milling products with a material yielding active chlorine or with active chlorine may precede such addition. By the latter treatment some of the enzymes or other materials present which could exert a detrimental influence on the additions are made inactive.

It is also possible to obtain very favourable results when besides the above-mentioned bodies peroxides, per-salts or other suitable per-compounds are added.

Though this is not necessary for the invention, it may in some cases be desirable to subject the material to which the bodies in question have been added to chemical and/or physical and/or mechanical treatment which increases the

favourable action of the additions. Thus, for example, the mixture can be subjected to the influence of chemically active (ultra-violet) rays.

An embodiment of the invention, which is to be preferred in any cases, consists in adding moisture to the meal, milling or meal product before, during or after the addition of the above bodies optionally until the same is reduced to the consistency of dough, which dough may also contain other ingredients necessary for baking purposes. It is clear that in this case the additions together with the moisture or with one of the other ingredients can be mixed with the product to be treated.

The bodies having the general character of peraldehydes, ozonides, perozone and the compounds derived therefrom are generally unstable materials and easily develop active oxygen. It is probable that to this effect the bleaching action is to be ascribed. As already stated, the bodies in question, either alone or mixed with peroxides or other suitable per-compounds, exert a surprisingly favourable influence on the other characteristics of the materials treated, as for instance in the baking qualities, in the colour of the baked product and on the "strength" of the milling products, while as a very important fact the costs of the new process are very small, which must be partly ascribed to the much greater quantity of active oxygen of these compounds.

The fact that a simple mixing gives a very favourable result is a characteristic which makes the process of a very great value.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Process of improving meal, milling and meal products consisting in that these products are treated with one or more peraldehydes, ozonides, perozone or peroxy-bodies of like character substantially as described.

2. A process according to Claim 1, characterised in this that in addition to the bodies or derivatives mentioned in the preceding claim peroxides or other suitable per-compounds are employed.

3. A process according to Claim 1 or 2, characterised in this that the meal, milling or meal products mixed with the additions are subjected to the influence of a chemical and/or physical and/or mechanical treatment.

4. A process according to Claim 1, 2 or 3, characterised in this that before, during or after the addition of the

materials mentioned in the preceding claims moisture is added optionally in quantities sufficient to reduce the whole to the consistency of dough.

- 5 5. A process according to Claim 1, 2, 3 or 4, characterised in that the addition of the bodies mentioned in the preceding claims is preceded by a treatment of the

meal, milling or meal products with a material yielding active chlorine or with 10 active chlorine.

6. The improved process of treating meal, milling and meal products substantially as hereinbefore described.

Dated this 7th day of October, 1922. 15  
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